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Stated Meeting, May 20, 1870.

Present, ten members.

MR. FRALEY, Vice-President, in the Chair.

A letter accepting membership was received from Maj. R. E. Williamson, dated San Francisco, May 10th, 1870.

A letter respecting the Byington MSS. was received from Prof. Jos. Henry, Sec'y Smithsonian Institute, Washington, D. C., May 16th.

Donations for the Library were received from the Academies at Turin, Berlin and Boston; the Annales des Mines, and Nature; the R. Astronomical Society: Essex Institute; Boston Public Library; Silliman's Journal; American Museum of Natural History in New York, and Dr. Wm. Duncan, of Savannah.

The death of Dr. Jas. Y. Simpson, of Edinburgh, was announced by the Secretary.

ON THE GEOLOGICAL AGE AND EQUIVALENTS OF THE MARSHALL GROUP.

BY PROF. A. WINCHELL,

DIRECTOR OF THE GEOLOGICAL SURVEY OF MICHIGAN..

PART II.[112]

IV. PRESENT STATE OF OUR PALEONTOLOGICAL KNOWLEDGE.

I come now to the most important and most interesting branch of this investigation. In order that others may be placed in full possession of all

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[112] For Part I of this paper, see Proceedings American Philosophical Society, vol xi., p, 57 (March 5, 1869). Both Parts of the paper were presented to the Chicago meeting of the American Association for the Advancement of Science, August 11, 1868. It was not offered for publication in the Proceedings in consequence of its length. It was reported, however, in the Chicago news papers, and the chief points were briefly stated in the *American Naturalist* for October, 1868, p. 445 Part I. was published in these "Proceedings" without alteration; and Part II., as here presented is unchanged, except in the omission of some detailed lists of fossils, and in the addition of a few remarks based on late discoveries in Tennessee and Pennsylvania, and which have been made public in these Proceedings, vol. xi., p. 245, etc.

Stated Meeting, May 20, 1870,

Continued from page 385.

The following communication, descriptive of the recent hail storm of the 8th inst., was received from Mr. Hector Orr, of Philadelphia. Mr. Trego, Prof. Cresson, Dr. Coates, and Dr. Horn described the storm as they saw it, and Judge Lowrie compared its features with those of the great hail storm at Pittsburg, which he saw Sep. 30, 1850.

PHILADELPHIA, May 17, 1870.

To the Secretary of the Amer. Phil. Soc.

SIR:—I have not seen any scientific account of the late fierce hail storm of the 8th inst. in print. I noticed the following points of fact connected with it.

The moon entered her first quarter at 10.34′ A. M. that day. Wind from sunrise onward was brisk from N. E. till noon; a light *scud* flying quite low, some two points divergent from the surface current, and a heavy upper stratum of cloud coming nearly from the South. Towards noon the upper clouds showed signs of condensation, and by 2 P. M., the various currents seemed to converge over the city. At this time the sun and moon made nearly equal angles on either side of our meridian, both planets being also well advanced towards the zenith. Rain began to fall about 2.10′, the wind then passing across the pole from N. E. to N. W. For several minutes previous to the fall and at its commencement, the electrical discharges were violent and frequent.

The halting of the clouds directly over head happened within that period of the day in which the sun develops the most heat, and the artificial warmth always present over such a surface as that of the built-up part of Philadelphia, joined to the solar influence, seemed to me sufficient to drive the vapor suddenly upward almost perpendicularly. The concentration, congelation and precipitation, were thus all embraced in a period of thirty minutes.

The demolition of glass shows the wind to have come from the N. W. until the storm reached the line of Sixth street, when it became West, and thus continued to the Delaware. The original breeze entirely spent itself during the fall, for during the last seconds of it the tendency of the stones was slightly from the S. E.—the storm centering itself on the city plot.

Yours, Very Respectfully,

HECTOR ORR.

Dr. Genth communicated a new discovery of rhodium gold in San Domingo, and the results of recent examinations of dirt excavated in Philadelphia, holding silicate jems indicative of the presence of gold.

Dr. Genth stated that, according to Del Rio, an alloy of gold and rhodium is found in Mexico, which contains from 34 to 43 per cent. of the latter metal. This discovery has never been confirmed, and there is perhaps no mineralogist living who ever has seen it. Some experiments which he has lately made with residues from San Domingo gold leave very little doubt as to the existence of this very interesting substance. Prof. Gabb sent a lot of gold from San Domingo to Dr. Horn, from which the latter dissolved the gold by aqua regia, and placed the very minute residue into his hands! This consisted of scales of Iridosmine, a dull, yellowish substance, in microscopic rounded and angular grains, and a silicate which under the microscope appeared to be topaz. One of the yellowish grains, on being flattened out in an agate mortar, assumed metallic lustre and a pale yellow color. It was almost insoluble in aqua regia, but by treating it for several days with a large excess of this solvent, it was finally brought into solution. A trace of chloride of ammonium was added, and the whole evaporated to dryness and sufficiently heated to reduce the gold. Mixed with this were microscopic reddish crystals, which were dissolved in boiling water, filtered, the filtrate evaporated to dryness, and the residue slightly heated, by which it assumed a reddish brown color. On being fused with bisulphate of potash it gave a slightly rose-colored mass, soluble in water; and precipitated yellow by ammonia. From these reactions there seems to be no doubt that the yellowish grains are rhodium-gold.

Dr. Horn states that the gold received from Prof. Gabb came from the South side of the Island, and contained about 95 per cent. of gold. Dr. Genth remarked that some of the gold from the North side is of a peculiar nature; that several years ago a lot had been sold in this city and New York to jewellers, who stated that they could not work it, as it contained a substance unknown to them. It is very probable that this was also rhodium-gold.

Dr. Genth communicated the result of panning sand and gravel of the Delaware River, dug from a cellar at 106 Arch street. After removing quartz and other light substances, a considerable quantity of heavy black sand remained, which contained a little magnetite, but a large quantity of titaniferous iron (menaccanite). These were treated and dissolved with chlorhydric and sulphuric acid, which left the silicates clean enough for further examination. These consisted principally of very brilliant but microscopic zircons, some garnets and a few yellowish green grains of the appearance of chrysolite. The observed mineral generally accompany gold, but not a particle of the latter could be found. This negative result, however, does not prove its absence, because the quantity of the sands washed was not large and they did not come from the bed rock, where they are always far richer.

Prof. Cope exhibited a portion of the dorsal spine of a shark of the genus *Asteracanthus* of Agassiz, from New Jersey, the first on record from the United States.* He regarded it as confirmatory of his theory respecting the existence of beds of Jurassic age in that State, though probably of small extent.

Prof. Cope made some observations on the genus *Labidesthes*, Cope, which he had discovered in the Clinch River, E. Tennessee; he said it was an *Atherinid*, having considerable resemblance to the Cyprinodont genus *Belonesox*, having a prolonged premaxillary beak.

Pending nominations Nos. 651 to 659 were read.

The Committee on the Michaux Legacy reported through Mr. Price, that a site for the Oak Grove had been selected.

The Committee on the Michaux Legacy have the satisfaction to report, that in pursuance of the arrangement made between this Society and the Fairmount Park Commissioners, the latter have lost no time in selecting a site for the Grove, in a central portion of the Park westward of the Schuylkill, on the Landsdowne drive. It was selected with a view to suitableness, in furnishing the kinds of soil required by oaks, both upland and low land; dry and moist. There were found already growing, stately oaks of a century's growth, to form at once an impressive scene of shade and sunlight, to become more dense in foliage as the trees recently planted and soon to be planted, shall grow and expand their shade. There have been planted such additions to the previous varieties as could be had near this city. The annexed report of John C. Cresson, the Chief Engineer of the Fairmount Park, shows that seventeen different kinds of oaks are now in the Michaux Grove; and the Park Commission have authorized the importation from France of all other species that will live in this climate; a resource to us for the grove, largely enriched by the scientific labors and zeal of the Messieurs Michaux, who made known to the world the great variety of oaks that were native to this country.

PHILADELPHIA, May 18th, 1870.

Hon. E. K. Price,

Chairman of Committee on Michaux Legacy.

DEAR SIR:—Under the arrangements made for carrying into effect the Will of the late F. A. Michaux, a grove of oak trees, named the Michaux Grove, has been established in Fairmount Park.

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* In the Proceedings of the Acad. Nat. Sci., Phila., No. 1, for Jan.-April, 1870, at page 13, there subsequently appeared the report of a communication on *Asterocanthus iderius*, made by Dr. Leidy, at a meeting held March 22, 1870.

It now contains one hundred trees of the following species:

Quercus alba.
Q. bicolor.
Q. cerris.
Q. coccinea.
Q. falcata.
Q. fastigiata.
Quer. fastigiata viridis.
Q. Fulhamensis.
Q. laurifolia.
Q. Leana.
Q. macrocarpa.
Q. nigra.
Q. palustris.
Q. phellos.
Q. prinus acuminata.
Q. robur.
Q. tinctoria.

In pursuance of authority given by the Park Commission, all other species of Oaks that will live in this climate are to be imported from abroad, chiefly from the nurseries of France.

Very Respectfully,
JNO. C. CRESSON,
Chief Engineer.

The following resolution was then passed:

Resolved, That Mr. Durand be respectfully requested to make known to the widow of the late André François Michaux what has been done by this Society, and the City of Philadelphia, through the Fairmount Park Commissioners, towards the carrying out the views of this lover of sylvan culture and benefactor of science, and towards holding his name in honor before the American People and Scientific World.

The resignation of Dr. Wood from the Presidency of the Society, on account of age and ill health, was presented by Prof. Cresson. When, on motion of Dr. Rushenberger, it was

Resolved, That the Secretaries be requested to address a letter to Dr. Wood, requesting him to withdraw his resignation, hoping that he will consent to remain with us as President of the Society.

Mr. Fraley informed the Society that Provost Stillé had been requested to deliver his obituary notice of Mr. Binney, Jun., before an audience of the Union League. On motion of Prof. Cresson, seconded by Dr. Coates, the MSS. was placed at the disposal of the author.

And the Society was adjourned.